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TITLE: Microminiaturized trench capacitor production in semiconductor device manufacture includes formation of top and bottom ruthenium electrodes and a tantalum pentoxide dielectric film

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ABSTRACTED-PUB-NO: WO 200215275A

BASIC-ABSTRACT: NOVELTY - Process involves making a circular opening in an interlayer insulating film, forming a lower ruthenium electrode by low-pressure remote sputtering, and depositing a ruthenium on the side wall of a deep hole.

After the ruthenium film deposited on the top face of the interlayer insulating film is removed, a dielectric film, e.g., Ta<sub>2</sub>O<sub>5</sub>, is deposited. Then an upper ruthenium electrode is deposited.

DETAILED DESCRIPTION - To obtain the upper ruthenium electrode, Ru (EtCp)<sub>2</sub> is deposited by chemical vapor deposition, in which the material is transferred by bubbling.

USE - Production of a microminiaturized trench capacitor.

ADVANTAGE - Under a condition (reaction rate-limiting condition) that the rate of deposition of the ruthenium film depends on the forming temperature, an upper ruthenium electrode with high coverage can be formed.

CHOSEN-DRAWING: Dwg.1d/9

TITLE-TERMS:

MICROMINIATURE TRENCH CAPACITOR PRODUCE SEMICONDUCTOR DEVICE MANUFACTURE

FORMATION TOP BOTTOM RUTHENIUM ELECTRODE TANTALUM DIELECTRIC FILM

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